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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,604	10/02/2003	Yam Mo Wong	P/4076-59	8937
2352 7590 08/20/2007 OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			EXAMINER KERN, KEVIN P	
			ART UNIT 1725	PAPER NUMBER
			MAIL DATE 08/20/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/677,604		WONG ET AL.	
	Examiner		Art Unit	
	Kevin P. Kerns		1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In this instance, the 2nd line includes the legal term "comprises", which should be replaced with "includes". In addition, "The invention provides a" should be replaced with "A" in the 1st line, as this phrase is one which can be implied.

2. The abstract of the disclosure is objected to because "(Figure 2(a))" should be deleted from the bottom of the abstract. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiura et al. (US 6,112,974) in view of Ano (US 6,815,836).

Nishiura et al. disclose a wire bonding method for bonding wire between first and second bonding points with a bonding tool, in which the method includes the steps of forming a first bond at the first bonding point with the bonding tool; moving the bonding tool to a first position spaced from the first bond by a first distance and located substantially vertically above the first bonding point; moving the bonding tool from the first position towards the first bonding point while keeping the bonding tool substantially vertically over the first bond, and applying a force (applying pressure via the bonding tool) on the first bond with the wire but without forming a second bond of the wire; moving the bonding tool to a second position spaced from the first bond by a second distance, wherein the tool is moved substantially vertically upwards and toward the second bonding point (column 3, line 20 through column 4, line 53; and Figures 1a-1e),

then moved away from the second bonding point in a curved motion (see Figure 3); moving the bonding tool to extend a sufficient length of wire to form a wire loop (M-shaped loop of Figure 1e); and thereafter moving the bonding tool to the second bonding point and forming a second bond (abstract; column 1, lines 6-10; column 2, lines 38-62; column 3, line 20 through column 5, line 3; and Figures 1-3). Nishiura et al. do not specifically disclose the step of forming a kink in the wire.

However, Ano discloses a method of wire bonding for a thin semiconductor package, in which the method includes the steps of forming a bond at a first bonding point and moving the bonding tool away from the first bond; forming a kink and loop (306,307) in the wire 304 having a curved portion, wherein the bonding tool is moved substantially vertically upwards and toward the second bonding point (column 5, lines 18-65; column 6, lines 30-37; and Figures 4A-4F). The wire diameter is less than 1 mil (~25 micron, or .98 mil, in this instance) and at approximately the same height as the first bonding point (column 3, lines 33-44; and Figures 2 and 3), with the wire loop comprising a ball bonded base portion, a neck portion, a curved portion which twists in a direction substantially transverse to the vertical axis, and a wire extending in a horizontal direction at substantially the same height as the top of the base portion (Figures 3 and 6), such that the formation of a kink in the wire is advantageous for obtaining a stronger (reinforced) wire and stronger bonding of the wire to itself and to the bonding point, as mechanical strength of the recrystallized portion of the wire near the ball is improved (abstract; column 1, lines 59-67; column 2, lines 1-57; column 3, line 33 through column 6, line 43; and Figures 1-8).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the wire bonding method for bonding wire between first and second bonding points with a bonding tool, as disclosed by Nishiura et al., by using the method of wire bonding that includes the step of forming a kink in the wire, as taught by Ano, in order to obtain a stronger (reinforced) wire and stronger bonding of the wire to itself and to the bonding point, as mechanical strength of the recrystallized portion of the wire near the ball is improved (Ano; abstract; column 1, lines 63-67; and column 2, lines 11-15 and 27-30).

Response to Arguments

6. The examiner acknowledges the applicants' amendment received by the USPTO on April 16, 2007. Upon further review, new objections to the abstract (see above sections 1 and 2) and new 35 USC 103(a) rejections (see above section 5) have been raised. All previously indicated allowable subject matter has been withdrawn in view of the new applied rejections under 35 USC 103(a) in above section 5. Claims 1-9 remain under consideration in the application.

7. Applicants' arguments with respect to previously rejected claims 1-9 in the prior Office Actions (as applicable to claims 1-9) have been considered but are moot in view of the new ground(s) of rejection under 35 USC 103(a).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on (571) 272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin P. Kerns *Kevin Kerns 8/16/07*
Primary Examiner
Art Unit 1725

KPK
kpk
August 16, 2007